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COPYRIGHT STATUTES THAT REGULATE TECHNOLOGY: A COMPARATIVE ANALYSIS OF THE AUDIO HOME RECORDING ACT AND THE DIGITAL MILLENNIUM COPYRIGHT ACT

Benton J. Gaffney

Abstract: Over the past two decades, as the presence of digital technology has become more and more ubiquitous, its tremendous capabilities of reproduction and distribution have created difficult issues for copyright law. Recently, Congress has addressed some of these issues by taking the nontraditional approach of directly regulating the manufacture, development, and distribution of technology. In 1992, Congress enacted the Audio Home Recording Act, requiring that all digital audio recording devices possess a serial copy management system to limit the copying of digital music recordings. Six years later, Congress passed the Digital Millennium Copyright Act, making it a crime to manufacture or distribute technologies for the purpose of circumventing technological measures taken by copyright owners to protect their copyrights. This Comment examines copyright regulation of technology by analyzing the relative merits of these two statutes vis-à-vis the broader goals of copyright law. It concludes that copyright statutes can best regulate technology if they designate a specific copyright protection system, require technology manufacturers to incorporate the protection system into their products, and identify a rulemaking body to maintain the statutes' effectiveness.

Within the last decade, Congress has enacted two important statutes that take the nontraditional approach of regulating technology to further the objectives of copyright policy. The Audio Home Recording Act of 1992 (AHRA)¹ regulates technology by requiring that all digital audio recording devices possess a serial copy management system to prevent the device from making copies of an already copied digital audio recording.² The Digital Millennium Copyright Act of 1998 (DMCA)³ regulates technology by prohibiting the manufacture and distribution of technologies designed or marketed for purposes of circumventing a technological measure that seeks to protect a copyrighted work.⁴

From a copyright policy perspective, each of these statutes responds to the concern that the capabilities of digital technology may significantly exacerbate the problems of copyright piracy. These fears of copyright piracy stem from two key aspects of digital technology: ease of copying

1. Pub. L. No. 102-563, 106 Stat. 4237 (1992) (codified at 17 U.S.C. §§ 1001–1010 (1994)).

2. See 17 U.S.C. § 1002(a) (1994).

3. Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified, in relevant part, at 17 U.S.C. § 1201 (Supp. IV 1999)).

4. See 17 U.S.C. § 1201(a)(2), (b)(1) (Supp. IV 1999).

and ease of distribution. Digital technology allows copyrighted works in a digital format to be copied perfectly, easily, and cheaply. Transmitting digital works over the Internet or other telecommunications networks similarly facilitates simple and cost-effective distribution. While beneficial in many ways, the advances of digital technology threaten to make it difficult for copyright owners to prevent piracy by bringing lawsuits against infringers, the traditional method of protecting ownership rights.

Although both the DMCA and AHRA seek to resolve these piracy concerns in a new fashion, neither is a complete solution, and certain aspects of each may even create new problems. For example, new technologies falling outside the scope of the AHRA may raise the same piracy concerns the AHRA was intended to address.⁵ One shortcoming of the DMCA is that its anticircumvention provisions do little to prevent piracy of the vast majority of works already available in an unprotected digital format.⁶ Another problem is that, by giving owners free rein to develop any protection measure they choose and making it a potential crime to distribute technologies that would bypass such measures, the DMCA provides copyright owners with an incentive to increase technological control of their works beyond the scope of traditional copyright protection.⁷ Furthermore, the strict penalties under the DMCA, combined with powerful protective systems, may prevent individuals from using protected works in ways traditionally encouraged under copyright law.⁸

This Comment examines the strengths and weaknesses of the DMCA and AHRA as copyright statutes that regulate technology. Part I provides an overview of copyright law and the policy objectives it seeks to accomplish. Part II highlights the improvements of digital technology over earlier technologies, the piracy implications of digital technology, and the key technologies of digital copyright protection systems. Part III describes the mechanics of the AHRA and DMCA and the means by which they regulate technology. Part IV identifies the advantages of regulating technologies over the traditional method of regulating uses in the context of digital works. Part V argues that both the AHRA and DMCA have substantial shortcomings. Finally, Part VI proposes that to

5. See *infra* Part V.A.

6. See *infra* Part V.B.

7. See *infra* Part V.B.

8. See *infra* Part V.B.

resolve these problems Congress should capitalize on the alternative strengths of the AHRA and DMCA by specifying in the statute the copyright protection system that manufacturers should incorporate into their products and designating a rulemaking body to maintain the statutes' effectiveness in the face of technological change.

I. THE FRAMEWORK OF COPYRIGHT LAW

Copyright law attempts to balance the interests of authors and the public by granting certain exclusive rights to authors but limiting these rights both in scope and duration. It has existed in American jurisprudence at least since the writing of the Constitution.⁹ Although the immediate effect of copyright protection is "to secure a fair return for an 'author's' creative labor," the ultimate goal is "to stimulate artistic creativity for the general public good."¹⁰ A major ongoing challenge for both courts and legislators is how to maintain this balance in the face of rapid technological change.

The 1976 Copyright Act¹¹ (Act) exemplifies Congress's attempt to strike a balance between private and public interests. It originally granted copyright owners five exclusive rights¹² concerning their works: the rights of reproduction, adaptation, distribution, performance, and display.¹³ Authors can bring an infringement action against anyone who violates the exclusive nature of these rights by using the copyrighted work without authorization in a way proscribed by the statute.¹⁴ The consequences of infringement can be severe both in terms of monetary damages¹⁵ and criminal penalties.¹⁶ The intended goal of granting

9. See U.S. Const. art. I, § 8, cl. 8 ("Congress shall . . . Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . .").

10. *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

11. Pub. L. No. 94-533, 90 Stat. 2541 (1976) (codified as amended at 17 U.S.C. §§ 101–1010 (1994)).

12. In 1995, the Digital Performance Right in Sound Recordings Act added the right to perform sound recordings by digital transmission as a sixth exclusive right. See Pub. L. No. 104-39, 109 Stat. 336 (1995) (codified at 17 U.S.C. § 106(6) (Supp. III 1997)).

13. See 17 U.S.C. § 106 (1994).

14. See 17 U.S.C. § 501 (1994).

15. Successful plaintiffs can choose between predetermined statutory damages that range from \$200 to \$100,000 or a sum equal to the actual loss and/or unjust enrichment that results from the defendant's infringement. See 17 U.S.C. § 504(a)–(c) (1994).

16. Willful infringers may face criminal sanctions. See 17 U.S.C. § 506 (1994).

copyright owners this “bundle of rights” is to provide a strong incentive for authors to create new works and make those works available to the public.¹⁷ To benefit the public interest, the Act also restricts the copyright owners’ exclusive rights.¹⁸ For example, the Act limits the duration of copyright protection¹⁹ and the scope of owners’ rights through the doctrines of fair use²⁰ and first sale.²¹ Thus, copyright law balances giving owners a limited monopoly over their works by circumscribing their rights in specific ways to enhance the use and availability of copyrighted works for the public good.

Since the enactment of the Act, however, new technologies have repeatedly upset this balance.²² Some technologies, such as photocopying and videotaping, have facilitated the infringement of authors’ rights.²³ Others, such as compact discs and encryption, have enabled authors to control the use of their works more tightly.²⁴ Both types of innovation

17. Although this economic-incentive model predominates in the United States, *see* *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975), other rationales justifying authors’ rights to control their intellectual property also exist in international, particularly European, copyright law. *See* Marshall Leaffer, *Understanding Copyright Law* 16–18 (3d ed. 1999). For example, according to the Lockean theory of property, effort expended by authors in creating their work entitles them to rights over the fruits of their labor. *See id.*

18. *See* 17 U.S.C. §§ 107–120 (1994); *see also* 17 U.S.C. § 121 (Supp. IV 1999).

19. *See* 17 U.S.C. § 302 (Supp. IV 1999) (limiting duration of copyrights to life of author plus 70 years).

20. The fair use doctrine balances public interest with the interests of the author by allowing a defense for certain uses that would otherwise infringe on the author’s exclusive rights. *See* 17 U.S.C. § 107. To evaluate whether a use is “fair,” courts weigh the following four factors: (1) the character of the use (commercial uses are less fair); (2) the nature of the copyrighted work; (3) the amount of the work that was used (using more of the work is less fair); and (4) the effect of the use on the market for the work (a more commercially harmful use is less fair). *See* *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 447–55 (1984); *Harper & Row, Publishers, Inc. v. Nation Enter.*, 471 U.S. 539, 560–69 (1985). In addition, certain types of uses also fall into the category of fair use, such as parody, criticism, news reporting, or education. *See* *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 584 (1994).

21. The first sale doctrine limits the scope of the author’s rights by precluding authors from restricting the distribution of a copy once it has been sold. *See* 17 U.S.C. § 109.

22. *See* *Sony*, 464 U.S. at 430 (“From its beginning, the law of copyright has developed in response to significant changes in technology.”).

23. Both of these technologies allowed for easy duplication of copyrighted works, thus creating substantial controversy in copyright law. *See id.* at 420 (videotaping); *Williams & Wilkins Co. v. United States*, 487 F.2d 1345, 1347 (1973) (photocopying), *aff’d by an equally divided court*, 420 U.S. 376 (1975).

24. For many years, the high cost of “burning” (copying) new compact discs lowered the risk of piracy in this medium. *See* Jeanmarie Lovoi, Note, *Competing Interests: Anti-Piracy Efforts Triumph Under TRIPS but New Copying Technology Undermines the Success*, 25 *Brook. J. Int’l L.*

have the potential for derailing copyright law's overall goal of maximizing the existence and availability of creative works.

As a particular technology makes this potential for imbalance more apparent, Congress generally responds by enacting new legislation to address the problems created by the new technology.²⁵ Most recently, the advent of digital technology has greatly affected copyright policy, resulting in a variety of legislative responses.²⁶ Before describing two such statutes, it is necessary to provide some background regarding digital technology, its advantages, the piracy concerns it raises, and the issue of copyright control.

II. DIGITAL TECHNOLOGY

A. *Advantages of Digital Technology over Earlier Technologies*

Digital technology and its effect on copyright law can be best understood by comparing it to the analog technologies that preceded it. The distinguishing feature between digital and analog technologies is that analog formats simulate the original work directly while digital formats replicate the original work by translating it into a language of ones and zeros.²⁷ Books, vinyl records, audiocassettes, and posters are examples of common analog formats, while compact discs, computer hard drives, and digital video discs (DVD) are examples of digital formats.²⁸

445, 475-76 (1999). The recent advent of low-cost compact-disc burners, however, may have opened this medium to piracy. *See id.*

25. Numerous examples of this phenomenon exist, including the Sound Recording Act of 1971, Pub. L. No. 92-140, 85 Stat. 391 (codified in scattered sections of 17 U.S.C. (1994)) (addressing concerns that advances in music taping were increasing music piracy), and the Record Rental Amendment of 1984, Pub. L. No. 98-450, 98 Stat. 1727 (codified at 17 U.S.C. §§ 109(b), 115(c)(3) (1994)) (addressing concerns that renting compact discs would promote illicit copying).

26. While this Comment discusses only two such statutes, the AHRA and DMCA, other statutes have also been enacted to address digital technology and copyright law. *See, e.g.,* The Digital Right in Sound Performance Act of 1995, Pub. L. No. 104-39, 109 Stat. 336 (codified in scattered sections of 17 U.S.C. (Supp. IV 1999)).

27. For example, Thomas Edison's original phonograph was an analog device that replicated sounds by translating the airwaves created by a sound into directly analogous grooves on paraffined paper. *See* 17 *The New Encyclopedia Britannica* 1050-51 (15th ed. 1998). Modern digital devices that produce sounds do not directly replicate the original sounds; instead, they translate the sounds into ones and zeros that can be converted back into sounds when later read by a digital device. *See* 27 *The New Encyclopedia Britannica* 625-26 (15th ed. 1998).

28. *See* Andrew S. Muroff, Comment, *Some Rights Reserved: Music Copyright in the Digital Era*, 1997 Det. C.L. Rev. 1241, 1270.

The competitive advantages of digital over analog technology are numerous. First, the integrity of digital copies is superior to analog ones. Because no technology yet allows the making of exact physical replicas, the slight variations that result each time a work is copied mean that analog works degrade in quality with each successive generation of copies.²⁹ In contrast, when digital copies are made, even if small physical differences between the original and the copy exist, the copied digital sequence of ones and zeros usually remains the same despite these differences.³⁰ Thus, a digital copy usually retains the same quality and precision as the original with no degradation in future generations of copies.³¹

Second, media that store digital information are usually less costly than their analog equivalents. For instance, it is cheaper to manufacture the plastic disc that makes up a DVD than the plastic box and reel of magnetic tape that makes up a videocassette.³² Similarly, it is cheaper to store a 100-page essay on a floppy computer disk than on actual paper. In short, digital technology reduces costs by storing more information in a smaller space and putting the information into media that are cheaper to manufacture.

A third advantage of digital technology is that it facilitates interactive systems and the transmission of digital works. While analog modes of transmission, such as radio broadcasting, telephone, facsimile, and television, are widespread, they lack a critical feature of digital technology: interactivity. An interactive system is one in which an individual can contact a sender and receive a transmission of specific information on demand.³³ While analog technology allows a certain level of interactivity, it is far more cumbersome than digital technology. For example, although a listener can request that a radio station play a specific song through the analog medium of a telephone call, this

29. For instance, if a page from a book is photocopied and copies are made from each successive new copy, the quality of each new copy will be inferior to its predecessor.

30. However, anyone who has ever had a corrupted computer file will know that digital copying is not always perfect. Nonetheless, relative to analog copying, digital copying duplicates the original work with much greater accuracy and precision. See Muroff, *supra* note 28, at 1270.

31. *See id.*

32. *See* Terry Pristin, *DVD Killed Video's Star; A Digital Step in Making the VCR Obsolete*, N.Y. Times, Jan. 7, 2000, at C1.

33. *See* 17 U.S.C. § 114(j)(4) (Supp. III 1997) (defining one form of interactive system, interactive services, as service "that enables a member of the public to receive a transmission of a program specially created for the recipient, or on request, . . . which is selected by or on behalf of the recipient").

requires more effort than simply clicking on the song at the radio station's web site and digitally downloading the song. Digital technology greatly facilitates interactivity because it allows instructions to be sent in a digital form. This makes it possible to have highly automated systems, such as computer networks, that can receive and read instructions and then send particular digital works to the individual making the request.³⁴ In contrast, analog systems lack a universal language similar to the ones and zeros of digital systems that would make complex functions more feasible in an analog setting.

The advantages of transmitting information digitally are enhanced by the Internet.³⁵ One of the most important technological innovations of the 1990s has been the transformation of the Internet from a network system used primarily by universities and government entities to the "information superhighway" accessed by tens of millions of users worldwide each day.³⁶ This has dramatically increased the average person's ability to transfer enormous quantities of digital information to almost anywhere in the world.

B. Copyright Piracy Implications of Digital Technology

Digital technology's many advantages can also facilitate copyright piracy, thus intensifying the concerns Congress faced with earlier technologies. For instance, while both analog and digital taping facilitate piracy by allowing for easy reproduction, digital copying exacerbates this problem because unlike analog copies, digital copies do not degrade in quality with subsequent generations of copies. Media for storing digital information, such as compact discs, floppy disks, or DVDs, also benefit pirating enterprises because these media are generally less expensive to manufacture and store than their analog equivalents of paper, records, or cassettes.³⁷ In addition, the ease with which digitized works can be distributed over the Internet or other telecommunications networks raises issues analogous to those presented by the advent of radio and television

34. Downloading digital works from the Internet is an example of sending such instructions through a digital interactive system.

35. See generally *Reno v. ACLU*, 521 U.S. 844, 849–53 (1997) (providing excellent description and explanation of Internet).

36. See *id.*

37. See *Pristin*, *supra* note 32, at C1.

broadcasting.³⁸ Yet, unlike those earlier technologies, the confluence of digitization and new telecommunication capabilities³⁹ gives the public an interactive⁴⁰ means of obtaining copyrighted works on demand. Finally, the combination of digital technology and the Internet exacerbates many of the problems of international copyright piracy. Previously, works pirated abroad reached American markets primarily by being physically smuggled into the country.⁴¹ Because international borders do not restrict the Internet, it is now possible for pirated digital works to reach American markets by purely electronic means.⁴²

C. *Protection of Copyrights in Digital Form*

While digital technology may facilitate piracy, "copyright management systems"⁴³ (CMS) have the potential to control tightly the uses of a digital work.⁴⁴ For example, CMS may restrict users from rendering, copying, or transferring a work unless they pay a fee to the copyright owner.⁴⁵ Alternatively, CMS may allow users to view a work but prohibit any copying or excerpting of the work.⁴⁶ These systems also vary greatly

38. Because radio and television provide widespread distribution of copyrighted works to the public, they initially presented issues such as how to broadcast copyrighted works in a way that adequately compensated owners (for example, by imposing compulsory licenses on the broadcast of musical works by radio stations under 17 U.S.C. § 115 (1994)) and which uses of the broadcasted works by consumers are permissible (for example, consumers' rights to videotape television broadcasts, such as in *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417 (1984)).

39. Such telecommunications capabilities include not only the Internet, but also satellite networks, cellular or "wireless" networks, and digital cable.

40. See *supra* note 33 and accompanying text.

41. See, e.g., Lovoi, *supra* note 24, at 469–70.

42. See Barak D. Jolish, *Scuttling the Music Pirate: Protecting Recordings in the Age of the Internet*, 17 SPG Ent. & Sports L. 9, 9–10 (1999).

43. CMS are "technologies that enable copyright owners to regulate reliably and automatically for access to digital works." Julie E. Cohen, *Some Reflections on Copyright Management Systems and Laws Designed to Protect Them*, 12 Berkeley Tech. L.J. 161, 161 (1997). As used in this Comment, the term CMS encompasses similar ideas such as "copyright protection systems," "automated rights management," and "trusted systems." See, e.g., 17 U.S.C. § 1201 (Supp. IV 1999) ("copyright protection systems"); Tom W. Bell, *Fair Use vs. Fared Use: The Impact of Automated Rights Management on Copyright's Fair Use Doctrine*, 76 N.C. L. Rev. 557 (1998) ("automated rights management"); Mark Stefik, *Shifting the Possible: How Trusted Systems and Digital Property Rights Challenge Us to Rethink Digital Publishing*, 12 Berkeley Tech. L.J. 137 (1997) ("trusted systems").

44. See Mark Stefik & Alex Silverman, *The Bit and the Pendulum: Balancing the Interests of Stakeholders in Digital Publishing*, Computer Law., Jan. 1999, at 1, 4.

45. See Cohen, *supra* note 43, at 162.

46. See *id.*

in terms of sophistication, security protection, and versatility. At one end of the spectrum are CMS that require a simple password to access digital information and do not prevent subsequent copying or distribution of the information.⁴⁷ More sophisticated systems, however, can manage many future uses of a digital work long after it has been obtained from the copyright owner.⁴⁸

Although a detailed explanation of various CMS is beyond the scope of this Comment, two examples of CMS are encryption and digital watermarking. Encryption simply refers to the process of encoding or scrambling digital information so that it is only readable to those who have the necessary tools to decrypt it.⁴⁹ Digital watermarking is the process whereby digital information is made part of the actual work (for instance, by minutely altering the sounds of a digital sound recording) in a way that is not humanly discernible, but rather, capable of being perceived by watermark-reading devices or software.⁵⁰ The two primary uses of digital watermarking are to identify copyrighted works by providing identifying information in the watermarks and to control use of the work by placing instructions in the watermark that limit the uses a device may make of the work.⁵¹ Both digital watermarking and encryption have different levels of sophistication and each may be used in conjunction with the other as part of a particular CMS.

III. COPYRIGHT LEGISLATION REGULATING TECHNOLOGY

Because digital technologies present such a “unique threat” to the balance of copyright interests,⁵² Congress has twice decided to regulate these technologies directly instead of reconfiguring copyright owners’ rights. These laws represent a departure from Congress’s historical approach of regulating only the uses of a copyrighted work, usually

47. See Margaret Jane Radin & Daniel L. Appelman, *Doing Business in the Digital Era: Some Basic Issues*, 570 PLI/Pat. 51, 56 (1999).

48. See Stefik & Silverman, *supra* note 44, at 4.

49. See Robert P. Merges, *The End of Friction? Property Rights and Contract in the “Newtonian” World of On-line Commerce*, 12 Berkeley Tech. L.J. 115, 117 (1997) (describing encryption and depicting its primary limitation as “guard[ing] only one link of a potentially very long commercial chain: the original exchange between seller and buyer”).

50. See Rosemarie F. Jones, Comment, *Wet Footprints? Digital Watermarks: A Trail to the Copyright Infringer on the Internet*, 26 Pepp. L. Rev. 559, 568–70 (1999).

51. See Jolish, *supra* note 42, at 11.

52. H. Rep. No. 105-551, pt. 2, at 25 (1998).

through the expansion or limitation of copyright owners' exclusive rights to their works.⁵³ Two copyright statutes that directly regulate digital technologies are the Audio Home Recording Act of 1992 (AHRA)⁵⁴ and the Digital Millennium Copyright Act of 1998 (DMCA).⁵⁵ While some overlap exists between these statutes,⁵⁶ they differ in the manner in which they regulate technology, the purposes for which they were enacted, and the types of technologies they regulate.

A. *The Audio Home Recording Act of 1992*

The AHRA resulted from a compromise between the music-recording and electronics industries over the manufacture of digital audio tape (DAT) players.⁵⁷ The AHRA has three essential parts: a copying control system,⁵⁸ a royalty scheme,⁵⁹ and a prohibition against infringement suits for noncommercial uses of music recordings.⁶⁰ Although this section discusses all three components, the focus is on the copying control system of the AHRA. The scope of the AHRA will also be addressed in the context of a recent Ninth Circuit case that examined the AHRA's applicability to computers and related devices.

53. See *id.* at 24; see also 17 U.S.C. § 106 (Supp. III 1997) (providing copyright owners exclusive rights); 17 U.S.C. §§ 107–120 (1994) (providing limitations on exclusive rights); 17 U.S.C. § 121 (Supp. IV 1999) (same).

54. Pub. L. No. 102-563, 106 Stat. 4237 (1992) (codified at 17 U.S.C. §§ 1001–1010 (1994)).

55. Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified, in relevant part, at 17 U.S.C. §§ 1201–1205 (Supp. IV 1999)).

56. For instance, similar to the DMCA's anticircumvention provisions, the AHRA contains a provision prohibiting the circumvention of the serial copy management system. See 17 U.S.C. § 1002(c) (1994).

57. DAT technology raised music industry concerns because it enabled cost-effective "perfect" copying that would promote piracy and erode the market for commercial music recordings. See H. Rep. No. 102-873, pt. 2, at 2 (1992). After prolonged negotiations and the filing of a suit by the music industry against Sony Corp., see *Cahn v. Sony Corp.*, 90 Civ. 4537 (S.D.N.Y. filed July 1990), the electronics and music industries agreed on a solution that formed the basis of the AHRA. See S. Rep. No. 102-294, at 32–33 (1992).

58. See 17 U.S.C. § 1002 (1994).

59. See 17 U.S.C. §§ 1003–1007 (1994).

60. See 17 U.S.C. § 1008 (1994).

1. *Technology Controls of the AHRA: The Serial Copy Management System*

The AHRA regulates technology by requiring that all “digital audio recording devices”⁶¹ or “digital audio interface devices”⁶² possess the Serial Copy Management System (SCMS) or its functional equivalent.⁶³ The SCMS is a system that allows unlimited copies to be made from lawfully purchased music recordings but prevents making copies from copies.⁶⁴ It functions by encoding a digital “flag” at the beginning of the work that tells the device whether a copy can be made of the recording.⁶⁵ A device equipped with an SCMS will copy only digital sound recordings that are “flagged” with the proper code indicating that a copy may be made.⁶⁶ When the SCMS-equipped device makes a copy, it changes the encoded information to indicate that no future copies can be made from the copied recording.⁶⁷ Congress included several provisions designed to maintain the efficacy of the SCMS by prohibiting both the manufacture or distribution of devices designed to circumvent the SCMS⁶⁸ and the encoding of false or inaccurate SCMS information on digital music recordings.⁶⁹

One effect of the SCMS requirement is that it limits the degree to which private sharing can affect the market for commercial music and sound recordings. Even though commercial pirates can still make unlimited copies from a single original and sell those to the public,⁷⁰ the SCMS mitigates the extent to which copies can spread among private

61. 17 U.S.C. § 1001(3) (1994) (defining “digital audio recording device” as “any machine or device of a type commonly distributed to individuals . . . , the digital recording function of which is designed or marketed for the primary purpose of . . . making a digital audio copied recording for private use”).

62. 17 U.S.C. § 1001(2) (1994) (defining “digital audio interface device” as device that acts as conduit for digital audio information going to digital audio recording device).

63. *See* 17 U.S.C. § 1002(a). The exact SCMS requirements are presented in the Technical Reference Document for the Audio Home Recording Act of 1991. *See* S. Rep. No. 102-294, at 17 (1992).

64. *See* S. Rep. No. 102-294, at 36 (describing how SMCS functions).

65. *See id.* at 37.

66. *See id.*

67. *See id.*

68. *See* 17 U.S.C. § 1002(c) (1994).

69. *See* 17 U.S.C. § 1002(d) (1994).

70. *See* Lovoi, *supra* note 24, at 480 (describing how piracy operations have continued despite presence of SMCS controls in new “compact disc-recordable” devices).

individuals. For instance, if a digital music recording purchaser makes a copy for a friend, the SCMS prevents the friend from making copies for other friends, who could then make copies for their friends, and so on. Between these two types of unauthorized copying, commercial piracy and private sharing, the latter is far more difficult to prevent.⁷¹

The SCMS requirement is complemented by the AHRA's other two elements: the royalty scheme and the noncommercial-use immunity provision. Because the SCMS still allows significant amounts of copying to occur, the music industry felt that the SCMS alone would inadequately compensate for the unauthorized private copying.⁷² At the same time, consumers and the electronics industry remained concerned that private copying could give rise to an action for infringement or contributory infringement.⁷³ The resulting compromise created a royalty system whereby royalties are levied on sales of digital audio recording devices and the media onto which they record, with the proceeds to be distributed to copyright owners of audio recordings.⁷⁴ The concerns of consumers and the electronics industry also were mollified by prohibiting copyright infringement actions based on the manufacture, importation, or distribution of digital audio recording devices or on the noncommercial use of digital or analog music recordings.⁷⁵

2. *Defining the Scope of the AHRA: Recording Industry Ass'n of America v. Diamond Multimedia Systems, Inc.*

The scope of the AHRA is critical to how it functions. Although the statutory language of the AHRA describes the SCMS and royalty system as applying to "digital audio recording device[s],"⁷⁶ the statutory definition of this phrase does not cover all devices that can record digital

71. While commercial piracy is certainly a threat to copyright owners, large-scale decentralized copying by private individuals may be a much greater threat because it is harder to detect, deter, and obtain remunerative remedies. See *infra* Part IV.B.

72. See S. Rep. No. 102-294, at 38-39 (describing need for royalty system).

73. See *id.* at 38.

74. See 17 U.S.C. §§ 1003-1004 (1994) (describing how royalties are indirectly collected in form of two-percent tax on sales of digital audio recording devices and three-percent tax on sales of digital audio recording media); see also 17 U.S.C. §§ 1006-1007 (1994); Muroff, *supra* note 28, at 1252 n.82 (detailing breakdown of royalty distributions under § 1006).

75. See 17 U.S.C. § 1008 (1994).

76. 17 U.S.C. §§ 1002(a), 1003(a) (1994).

sounds.⁷⁷ The recent case of *Recording Industry Ass'n of America v. Diamond Multimedia Systems, Inc.*⁷⁸ dealt with this issue at length and provided a thorough analysis for determining whether a device is regulated by the AHRA.

In *Diamond*, the Recording Industry Association of America (RIAA)⁷⁹ sought an injunction against the manufacture and sale of a device called the Rio PMP 300 (Rio) that would allow listeners to copy MP3⁸⁰ music files from their computers onto portable "walkman" style MP3 players.⁸¹ The RIAA feared that the Rio would encourage piracy because a major source of MP3 music files is Internet sites that promote downloading pirated MP3 versions of copyrighted songs.⁸² The RIAA argued that an injunction was proper because the Rio was a digital audio recording device that lacked an SCMS and therefore violated the AHRA.⁸³ The district court denied the RIAA's request for an injunction, finding that although the Rio was a digital recording device under the AHRA, its lack of a digital output capability made it impossible to copy music serially from a Rio to another device.⁸⁴ The court concluded that an injunction was unnecessary because "incorporating [an] SCMS into the Rio appears an exercise in futility" and "the Rio adequately 'prohibit[s] unauthorized serial copying.'"⁸⁵ On appeal, the Ninth Circuit did not reach the question of whether the Rio met the SCMS requirements of the AHRA because it found that the Rio was not a "digital audio recording device"

77. See 17 U.S.C. § 1001(3) (1994).

78. 180 F.3d 1073 (9th Cir. 1999).

79. The RIAA represents "the roughly half-dozen major record companies (and the artists on their labels) that control approximately ninety percent of the distribution of recorded music in the United States." *Id.* at 1074

80. MP3 (Motion Picture Experts Group, Audio Layer 3) is a format that compresses the digital sound data in a sound file to one-tenth its original size with very little degradation in sound quality. See Jennifer E. Markiewicz, Comment, *Seeking Shelter From the MP3 Storm: How Far Does the Digital Millennium Copyright Act Online Service Provider Liability Limitation Reach?*, 7 CommLaw Conspectus 423, 439-40 (1999). This allows for much easier transfer and storage of digital music files.

81. See *Diamond*, 180 F.3d at 1074-75.

82. See *id.* at 1073.

83. See *id.* at 1075.

84. See *Recording Indus. Ass'n of Am. v. Diamond Multimedia Sys., Inc.*, 29 F. Supp. 2d 624, 632 (C.D. Cal. 1998), *aff'd*, 180 F.3d 1073 (9th Cir. 1999).

85. *Id.*

within the meaning of the AHRA.⁸⁶ The Ninth Circuit based its decision on the language, legislative history, and policy of the AHRA.⁸⁷

The Ninth Circuit began by analyzing the language of the AHRA.⁸⁸ The AHRA defines “digital audio recording device” as a device that can make a “digital audio copied recording,”⁸⁹ the definition of which is a copied “digital musical recording.”⁹⁰ However, digital audio recording devices are only those devices distributed for individual use (private or nonprofessional) and whose primary purpose is to make digital audio copied recordings.⁹¹ The AHRA expressly excludes from its definition of “digital musical recording” any “material object . . . in which one or more computer programs are fixed.”⁹² Because a Rio relies on a computer to supply it with MP3 songs,⁹³ the court concluded that songs played on a Rio could not constitute “digital musical recordings” because the hard drive from which the songs were copied was almost certainly a material object with computer programs fixed on it.⁹⁴ The Ninth Circuit also rejected the district court’s finding that Congress did not intend computers to have such a broad exemption from the AHRA, because “the Act seems to have been expressly designed to create this loophole.”⁹⁵

In addition, the Ninth Circuit’s holding rested on the legislative history and policy behind the AHRA. In explaining what types of devices have the primary purpose of making digital audio copied recordings, the Senate Report on the AHRA states that “the typical personal computer would not fall within the definition of ‘digital audio recording device.’”⁹⁶ The court relied on this statement to support its conclusion that the multifunction nature of computers excluded them and devices dependent on them—like the Rio—from the AHRA.⁹⁷ Finally, the court reasoned that “the Rio’s operation is entirely consistent with the Act’s main

86. *See Diamond*, 180 F.3d at 1081.

87. *See id.* at 1076–81.

88. *See id.* at 1075.

89. 17 U.S.C. § 1001(3) (1994).

90. 17 U.S.C. § 1001(1) (1994).

91. *See* 17 U.S.C. § 1001(3).

92. 17 U.S.C. § 1001(5)(B) (1994).

93. *See Diamond*, 180 F.3d at 1076.

94. *See id.*

95. *Id.* at 1078.

96. *Id.* (quoting S. Rep. No. 102-294, at *122 (1992)).

97. *See id.*

purpose—the facilitation of personal use.”⁹⁸ More specifically, the court determined that the Rio’s ability to “space-shift” MP3 files that already existed on the user’s hard drive was a “paradigmatic noncommercial personal use entirely consistent with the purposes of the Act.”⁹⁹

B. *The Digital Millennium Copyright Act of 1998*

The second copyright statute directly regulating digital technology is the Digital Millennium Copyright Act (DMCA).¹⁰⁰ Unlike the AHRA, which focuses primarily on digital sound recordings and devices that play them, the DMCA is a highly complex statute that covers subjects as diverse as copyrights for boat hull designs¹⁰¹ and safe harbors for Internet service providers.¹⁰² Of the five titles that make up the DMCA, this Comment will address only the provisions in Title I dealing with the circumvention of copyright management systems. These anticircumvention provisions allow copyright owners a cause of action against individuals who either circumvent the technological measures that protect their copyrighted works¹⁰³ or provide the technological means for others to do so.¹⁰⁴ The DMCA creates three essential prohibitions against circumventing copyright protection systems.¹⁰⁵

The first prohibition of the DMCA states that “[n]o person shall circumvent a technological protection measure that effectively controls access to a work protected under this title.”¹⁰⁶ Because this broad

98. *Id.* at 1079.

99. *Id.* For an example of this paradigm of personal use, see *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 455 (1984) (holding that consumers who “time-shifted” when they watched television programs by using their VCRs to record them for later enjoyment did not engage in copyright infringement).

100. Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified, in relevant part, at 17 U.S.C. § 1201 (Supp. IV 1999)).

101. See 17 U.S.C. §§ 1301–1332 (Supp. IV 1999).

102. See 17 U.S.C. § 512 (Supp. IV 1999) (containing safe harbor that limits liability for online service providers if they take certain precautions).

103. See 17 U.S.C. § 1201(a)(1) (Supp. IV 1999).

104. See 17 U.S.C. § 1201(a)(2), (b)(1) (Supp. IV 1999); see also, e.g., *Universal City Studios, Inc. v. Reimerdes*, 53 U.S.P.Q.2d 1780 (S.D.N.Y. Feb. 2, 2000) (applying § 1201(a)(2) to web sites that posted software that enabled users to decrypt copy-protection code on DVDs); *RealNetworks, Inc. v. Streambox, Inc.*, No. 2:99CV02070, 2000 WL 127311 (W.D. Wash. Jan. 18, 2000) (interpreting § 1201(a)(2) and § 1201(b)(1) in context of software application that circumvented copying controls in streaming media player).

105. See 17 U.S.C. § 1201(a)(1)–(2), (b)(1).

106. 17 U.S.C. § 1201(a)(1)(A).

proscription is not limited to those who intend to infringe a copyright, several accompanying provisions mitigate the potential for harsh results. First, the provision does not become effective until two years after the enactment of the DMCA.¹⁰⁷ Second, the statute provides an exemption for those “adversely affected by virtue of such prohibition in their ability to make noninfringing uses of that particular class of works.”¹⁰⁸ Finally, the statute requires that the Librarian of Congress evaluate the prohibition during the two-year moratorium and during each succeeding three-year period to make rules allowing additional exemptions.¹⁰⁹

The second DMCA prohibition also seeks to prevent unauthorized access to protected works. It states that “[n]o person shall manufacture, import, offer to the public, or otherwise traffic in any technology, product, service, device, component, or part thereof,” that is designed, marketed, or whose only commercial significance is “to circumvent a technological measure that effectively controls access to a work protected under this title.”¹¹⁰ Thus, the distinction between the first and second prohibitions is that while the first prohibits acts of circumvention, the second prohibits technologies designed to circumvent systems that prevent unauthorized access to protected works.

While similar to the second prohibition in its focus on technology, the third prohibition of the DMCA differs from the first two in that it seeks to protect copyright holders’ statutory rights to their works under the 1976 Copyright Act as opposed to preventing unauthorized access to their works. More specifically, the DMCA prohibits technologies designed, marketed, or whose only commercial significance is “to circumvent protection afforded by a technological measure that effectively protects a right of a copyright owner under this title.”¹¹¹ The distinction between the second and third prohibitions is that the copyright holders’ rights protected under the latter are subject to the limitations of

107. The effective date of the DMCA was October 28, 1998, making § 1201(a)(1)(A) effective October 28, 2000. *See* 17 U.S.C. § 1201(a)(1)(A).

108. 17 U.S.C. § 1201(a)(1)(B). Such adversely affected users might include schools, libraries, journalists, or individuals who frequently make fair use of copyrighted works. *See supra* note 20.

109. *See* 17 U.S.C. § 1201(a)(1)(C) (enumerating factors for Librarian of Congress to consider in rulemaking proceedings, such as availability of copyrighted works; impact of prohibition on news reporting, teaching, and research; value of copyrighted works; and other factors deemed appropriate).

110. 17 U.S.C. § 1201(a)(2).

111. 17 U.S.C. § 1201(b)(1) (Supp. IV 1999).

the 1976 Copyright Act¹¹² while the protections against unauthorized access are not.¹¹³

Lastly, separate provisions in the DMCA exempt certain activities or groups from liability under the anticircumvention provisions.¹¹⁴ For example, some exemptions are available for libraries and schools, law enforcement and government agencies, reverse engineering, encryption research, protecting personal privacy, and security testing.¹¹⁵

IV. REGULATING DIGITAL TECHNOLOGIES CAN OVERCOME THE DEFICIENCIES OF THE TRADITIONAL METHOD OF REGULATING USES

In the copyright context, Congress has enacted statutes that directly regulate developers, manufacturers, and distributors of technology only when the traditional approach of regulating uses of copyrighted works appears ineffective at achieving the balance between users and owners that copyright law seeks to maintain.¹¹⁶ The advent of digital technology and the piracy concerns that accompany it¹¹⁷ have created such a situation.¹¹⁸ In the digital context, regulating technology has the advantage of preventing piracy before it can occur by mitigating or eliminating the means used to facilitate it. Regulating technology also allows copyright owners to bring suit against less dispersed and more easily identifiable targets such as the manufacturers and distributors of technologies that promote piracy. Thus, statutes that regulate technology provide a solution to the problems that digital technology creates for the traditional method of protecting copyrights.

112. See *supra* notes 18–21 and accompanying text.

113. See Jane C. Ginsburg, *Copyright Legislation for the "Digital Millennium,"* 23 Colum.-VLA J.L. & Arts 137, 152 (1999) (describing purpose of 17 U.S.C. § 1201(b)(1)).

114. See 17 U.S.C. § 1201(d)–(j) (Supp. IV 1999).

115. See 17 U.S.C. § 1201(d)–(j).

116. An example of such legislation is the prohibition against satellite television descramblers in the Satellite Home Viewer Act of 1988. See Pub. L. No. 100-667, 102 Stat. 3960 (1988) (codified at 47 U.S.C. § 605(e)(4) (1994)); see also H. Rep. No. 105-551, pt. 2, at 24 ("Congress has historically advanced this constitutional objective [of copyright law] by regulating the use of information—not the devices or means by which the information is delivered or used.").

117. See *supra* Part II.B–C.

118. See H. Rep. No. 105-551, pt. 2, at 25 (1998) (describing digital technology as presenting "unique threat to the rights of copyright owners").

A. *The Traditional Method of Copyright Protection Relies on Self-Enforcement of Copyright Owners' Exclusive Rights*

Traditionally, Congress has sought to prevent copyright infringement by giving copyright owners certain exclusive rights to their works,¹¹⁹ thus encouraging them to prevent piracy themselves by bringing suit against individuals who infringe the owners' rights. Because this model relies on the ability of copyright owners to bring suit to enforce their exclusive rights, it is effective only if copyright owners can readily identify infringers and cost-effectively bring suit against them. Identifying viable defendants, in turn, usually depends on the degree to which the infringement is centralized.¹²⁰ For example, it is far easier to discover an infringer, sue, collect damages, and stop future infringement if a single individual accounts for ninety percent of the infringement, than if many unassociated individuals are infringing on a smaller scale.

The traditional method of copyright protection is better suited for protecting works in an analog format. Because of the higher costs associated with reproducing and distributing analog works, analog pirating enterprises rely on economies of scale.¹²¹ Enterprises that rely on economies of scale are, by definition, larger and more centralized than the smaller-scale piracy operations made economically feasible by digital technology.¹²² Thus, with analog works, small-scale infringement is less likely and copyright owners are more likely to sue larger copyright pirates that are easier to identify and bring to court because of their size and centralized nature.

119. See 17 U.S.C. § 106 (1994).

120. See Trotter Hardy, *Copyright and "New-Use" Technologies*, 23 Nova L. Rev. 657, 668 (1999) (describing difficulty in bringing suit against decentralized infringers).

121. See Eric Schlachter, *The Intellectual Property Renaissance in Cyberspace: Why Copyright Law Could Be Unimportant on the Internet*, 12 Berkeley Tech. L.J. 15, 20 (1997) (describing digital piracy as attractive because of contrast between virtually nonexistent marginal cost of pirating digital works and much higher costs of pirating analog works).

122. Economies of scale occur when enterprises seek to overcome high fixed costs by having a higher level of production. See Gloria J. Hurdle, *Price Discrimination and Economies of Scale in Merger Analysis*, Antitrust, Spring 1991, at 17. In regard to producing analog works, expensive machinery is necessary to print books or manufacture vinyl records, audiocassettes, videocassettes, and other analog formats. Therefore, it is more cost-effective to use economies of scale in producing these works.

B. Digital Technology Poses Challenges to the Traditional Method of Protecting Copyrights by Facilitating Decentralized Infringement and Making Self-Enforcement Impractical

Digital technology facilitates decentralized infringement, thereby limiting the traditional model's effectiveness at providing copyright protection. In particular, the combination of low-cost perfect copying with electronic distributive networks such as the Internet allows for widespread dissemination of high-quality copies at very low overhead costs. This not only makes it more economical to pirate digital works, but also more profitable to do so on a smaller scale. For instance, selling a pirated MP3 copy of the latest top-forty single on a web site can be far more cost-effective than copying the same song onto 100 audiocassettes and selling them at a flea market.¹²³ Thus, as small-scale digital piracy becomes more feasible, infringement activities may become less centralized among major copyright-pirating enterprises.¹²⁴

The ease of copying and distributing digital works also encourages unauthorized sharing of copyrighted works among private individuals. Although courts¹²⁵ and Congress¹²⁶ have in some instances deemed noncommercial uses of copyrighted works to be "fair uses," the justifications for these fair use exemptions are that the commercial market for the works was not being harmed¹²⁷ or that copyright owners were justly compensated.¹²⁸ It is not yet clear, however, whether noncommercial copying and distributing of copyrighted works over the Internet will have only a minor effect on the market for copyright

123. This occurs because if one already possesses a computer and Internet connection it costs very little to make a song available for downloading. In contrast, the costs of employing a salesperson and purchasing the blank cassettes make the flea market piracy operation far more expensive.

124. See Lovoi, *supra* note 24, at 464–66 (describing history of large-scale piracy enterprises in China, "the world's largest pirate market").

125. See, e.g., *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417 (1984) (holding that noncommercial recording of copyrighted television programs represented fair use); *Williams & Wilkins Co. v. United States*, 487 F.2d 1345 (Ct. Cl. 1973), *aff'd by an equally divided court*, 420 U.S. 376 (1975) (concluding that distributing photocopies of medical journals to medical researchers was fair use because plaintiff did not show that this practice was commercially harmful).

126. See 17 U.S.C. § 1008 (1994).

127. See *Sony*, 464 U.S. at 447–50 (justifying decision on grounds that "time-shifting" when viewers could watch free television programs would not hurt market for those programs).

128. See S. Rep. No. 102-294, at 38–39 (1992) (describing need for royalty system to compensate copyright owners for copying that would occur using digital audio recording devices).

owners' works.¹²⁹ Nonetheless, to the extent that such activities do harm copyright owners, the infringers' decentralized nature will make it difficult for copyright owners to prevent these activities because even if Congress made it easier to bring suit, identifying infringers and the costs of collecting judgments would be prohibitive.

C. *Regulating Digital Technology Is More Effective Than Regulating Uses*

In the context of digital piracy, regulating technology is far more effective than regulating uses because technology regulation overcomes the problem of decentralized infringement. By regulating technology, Congress can require technology manufacturers to install systems that restrict the extent to which a device will allow unauthorized copying or distributing of copyrighted works.¹³⁰ If a statute limits the ability of a device to make unauthorized copies or distributions of a work, then Congress has removed a tool that facilitates digital piracy before it can be used. Thus, regulating technology overcomes decentralization by attacking the problem at its core: it re-centralizes the infringement.

Statutes that regulate technology can also be more easily enforced than statutes that regulate uses of copyrighted works. Those who manufacture, develop, or distribute devices and technology must make a significant investment in facilities and equipment to carry on their business. As such, they are far more readily identifiable than digital pirates who can operate an infringing web site with little more than a computer and an Internet connection. In addition to being identifiable, these potential defendants are also much more likely to have sufficient assets to satisfy a judgment than a small-time infringer. Thus, from a

129. For instance, not long after video cassette recorders became popular, the movie industry feared that movie rentals would eliminate demand for movies in theaters. See Vincent Canby, *Those VCRs Are Causing Something Momentous*, N.Y. Times, Dec. 1, 1985, § 2, at 19. Just as the movie industry's fears proved unfounded—theater ticket sales have actually increased over the last two decades, see Bureau of the Census, U.S. Dept. of Commerce, *Statistical Abstract of the United States: 1998*, at 265 (118th ed. 1998)—it may turn out that fears of digital technology creating a similar dent in sales may also prove unfounded. For two different perspectives on this issue, compare Adam P. Segal, Comment, *Dissemination of Digitized Music on the Internet: A Challenge to the Copyright Act*, 12 Santa Clara Computer & High Tech. L.J. 97, 99–102 (1996) (describing problems with “lawless Internet” and potential harm to copyright owners), with Stefik & Silverman, *supra* note 44, at 2 (arguing that “trusted systems” allow such fine-grained control over copyrighted works that user and owner interests can be balanced).

130. For instance, the AHRA requires the installation of the SCMS, which limits the copying capabilities of digital audio recording devices. See 17 U.S.C. § 1002(a) (1994); *supra* Part III.A.1.

pragmatic perspective, regulating technology gives copyright owners a cause of action that is more enforceable.

V. THE TECHNOLOGY REGULATIONS OF THE AHRA AND DMCA HAVE SIGNIFICANT DEFICIENCIES

Although both the AHRA and DMCA seek to overcome the problem of decentralized infringement, each has certain shortcomings. The AHRA has too limited a scope to address new technologies that raise the same piracy concerns it was intended to resolve. Similarly, the anticircumvention provisions of the DMCA are problematic because they do not prevent piracy of copyrighted works that are available in an unprotected format. In addition, the DMCA harms the public interest by allowing copyright owners to increase their monopoly power over their works through unduly restrictive copyright management systems that cannot be legally circumvented even for legitimate purposes.

A. *The Limited Scope of the AHRA Precludes Its Application to Many New Technologies*

While the AHRA has the virtue of being a compromise between the interests of the recording industry, the electronics industry, and consumers,¹³¹ it resolves copyright issues only within the narrow context of the technologies it was designed to regulate: digital audio recording devices.¹³² Even the term “digital audio recording device” has a much narrower definition than simply a device that records digital sounds.¹³³ Therefore, to the extent that the AHRA is a successful law, such success is confined to the narrow context it addresses.

Three sources contribute to the limited scope of the AHRA: its statutory language, legislative history, and the cases interpreting it. Because the AHRA’s SCMS and royalty requirements apply primarily to “digital audio recording devices,” the definition of this phrase circumscribes the coverage of the AHRA.¹³⁴ The AHRA limits digital

131. See S. Rep. No. 102-294, at 40–41.

132. See 17 U.S.C. §§ 1001(3), 1002–1003 (1994); *supra* Part III.A.2.

133. See *supra* notes 89–95 and accompanying text.

134. It is important to note that, in addition to “digital audio recording devices,” § 1002 is also applicable to “digital audio interface devices,” and § 1003 is applicable to “digital audio recording mediums.” 17 U.S.C. §§ 1002(a), 1003(a). However, as each of these terms is closely intertwined with digital audio recording devices, for simplicity they will not be discussed separately. See 17

audio recording devices to only those devices distributed for individual use and designed for the primary purpose of making "digital audio copied recording[s]."¹³⁵ The legislative history indicates that this definition was intended to cover devices, such as digital audio tape recorders, whose sole purpose was to play and record music.¹³⁶ However, it also indicates that this definition would not include computers or other devices whose recording function was not primarily used for recording music.¹³⁷

Additionally, in *Diamond*, the Ninth Circuit interpreted the AHRA to apply only to those devices designed solely to record and play digital sound recordings but which do not need a computer (or other multi-functioning device) to accomplish their recording function.¹³⁸ Given its thorough analysis of the statutory language, legislative history, and policy of the AHRA, *Diamond* indicates that clear limits exist regarding the scope of this statute.¹³⁹ Importantly, *Diamond* shows that in determining whether the AHRA provisions apply, courts will closely scrutinize whether devices are themselves multipurpose or are dependent on other multipurpose devices. After *Diamond*, a device that depends on computers to obtain digital sound recordings or is similar to computers in that it has multiple functions will probably not fall within the scope of the AHRA.

Although the AHRA continues to have relevance for some new technologies,¹⁴⁰ its limited scope does not cover the many new technologies that combine digital music recording and computing and raise the same piracy concerns as devices whose primary purpose is to make digital audio copied recordings.¹⁴¹ Similarly problematic are copyright subject matters not covered by the AHRA (such as audio-

U.S.C. § 1001(2) (1994) (defining "digital audio interface device"); 17 U.S.C. § 1001(4)(A) (1994) (defining "digital audio recording medium").

135. 17 U.S.C. § 1001(3)(A)-(B) (1994).

136. See S. Rep. No. 102-294, at 47.

137. See S. Rep. No. 102-294, at 48 ("[N]either a personal computer whose recording function is designed and marketed primarily for the recording of data and computer programs, nor a machine whose recording function is designed and marketed for the primary purpose of copying multimedia products would qualify as a 'digital audio recording device.'").

138. See *Recording Indus. Ass'n of Am. v. Diamond Multimedia Sys., Inc.*, 180 F.3d 1072, 1081 (9th Cir. 1999); *supra* Part III.A.2.

139. See *supra* Part III.A.2.

140. See Lovoi, *supra* note 24, at 480.

141. See *Diamond*, 180 F.3d at 1081.

visual works) that soon may be capable of being copied or distributed just as easily as digital sound recordings. For example, if technology evolves such that videos can be copied from one computer to another as easily as music can be copied from one digital audio tape to another, the same kind of compromise embraced by the AHRA for digital audio recording devices may need to be reached for digital video recording devices. In such a case, either the scope of the AHRA will need readjusting or statutes accomplishing the same objectives as the AHRA will need to be adopted to cover these new technologies.

B. Difficulties with Anticircumvention Provisions of the Digital Millennium Copyright Act Result Either in Underprotection or Overprotection of Copyrights

The potential problems with the DMCA fall into two categories. On the one hand, the DMCA fails to protect copyright holders adequately because it narrowly defines circumvention technology and does not protect copyrighted works already distributed without technological protection measures. On the other hand, it may harm the public interest by allowing copyright owners to expand their rights beyond those protected by copyright law.

1. The Anticircumvention Provisions of the DMCA Do Not Adequately Address Piracy Concerns

a. The Limited Scope of the DMCA Precludes Its Application to Multipurpose Devices

Just as the AHRA applies only to devices whose primary purpose is to make digital audio recordings,¹⁴² the scope of the DMCA is limited in that it only applies to devices whose primary purpose, commercial significance, or marketed feature is to circumvent technological protection measures.¹⁴³ The legislative history of the DMCA indicates that the purpose of this limitation is to prevent the distribution of “black boxes”¹⁴⁴ used to decode encrypted or protected works.¹⁴⁵ Nevertheless, it

142. See 17 U.S.C. §§ 1001(3), 1002–1003 (1994).

143. See 17 U.S.C. § 1201(a)(2), (b)(1) (Supp. IV 1999); *supra* Part III.B.

144. “Black boxes” are devices that decode encrypted information, such as satellite or cable television descramblers. See S. Rep. No. 105-190, at 28–29 (1998).

is much more likely that the computer-driven world of the Internet will make multi-functioning devices like computers the primary tools for decrypting encoded works or bypassing copyright protection measures. Therefore, the DMCA has the same problem as the AHRA in that multi-purpose devices may not fall under DMCA provisions even though these devices present the same piracy concerns as those whose primary purpose is to circumvent protection measures.

b. Regulating Digital Protection Systems Renders the DMCA Only Partially Effective Against Piracy

While the anticircumvention provisions of the DMCA may prevent copyright pirates from profiting from works that exist in a protected format, these provisions do not apply to present or future works available in an unprotected format.¹⁴⁶ Therefore, the huge body of copyrighted material currently available without protective formatting will fall outside the scope of the anticircumvention provisions.¹⁴⁷ Even if the copyright industry immediately begins implementing protective measures, copyright pirates would have little difficulty in finding or purchasing an earlier unprotected version of a work in order to have a digital master from which to make copies. Thus, while the DMCA may provide protection for copyrighted works available solely in a protected format, it does not resolve the piracy concerns of copyright owners who already have unprotected versions of their works in circulation.

2. The DMCA May Harm Public Interests by Encouraging Overprotection of Copyrighted Works

Not only do the anticircumvention provisions of the DMCA leave several piracy issues unresolved, they also potentially threaten the ability of individuals to use copyrighted works in ways that "Promote the Progress of Science and useful Arts."¹⁴⁸ The reason the DMCA may undermine this constitutionally mandated goal is that its anticircum-

145. See S. Rep. No. 105-190, at 29 (stating that anticircumvention provisions were "drafted carefully to target 'black boxes'").

146. This occurs because a prerequisite for a DMCA anticircumvention suit is the existence of some protective measure that has been breached. See 17 U.S.C. § 1201(a)(2), (b)(1).

147. It is significant however, that the legislative history of the DMCA does not indicate that Congress intended for the DMCA to solve this problem.

148. U.S. Const. art. I, § 8, cl. 8.

vention provisions encourage and legally preserve copyright protection systems that give copyright owners more control over their works than they are entitled to under copyright law.¹⁴⁹ By encouraging copyright owners to devise any protection system that benefits them most, the DMCA risks tipping the balance of copyright law away from the public interest and toward copyright owners' interests.

The public interest may be harmed by copyright management systems (CMS) that tightly control the uses of a digital work.¹⁵⁰ While CMS may protect the exclusive rights provided under traditional copyright law,¹⁵¹ the corresponding limits on those rights¹⁵² are not required of CMS.¹⁵³ Thus, many uses that copyright law encourages, such as taking excerpts from works for educational purposes or sharing works through libraries, could be completely prevented by certain CMS. The anticircumvention provisions of the DMCA, which play an essential role in encouraging the development of CMS, may exacerbate this problem. CMS are costly to develop and implement and the more control and tighter security they offer, the more expensive they are likely to be.¹⁵⁴ Given these high costs, the incentive to develop advanced CMS would be undermined if no legal remedy existed against individuals who could circumvent CMS or market circumvention technologies. By creating such a legal remedy, the DMCA encourages copyright owners to develop CMS that tightly control use of their works.

The central problem with the DMCA is not that it encourages the development of CMS, but rather that it provides protection for CMS that expand copyright owners' exclusive rights beyond traditional copyright law. CMS that restrict legitimate and illegitimate uses of a copyrighted work can negatively affect fair use. The fair use doctrine encourages a variety of uses that support the overall goals of copyright law, regardless

149. See 17 U.S.C. § 1201(a)(1)(A), (a)(2), (b)(2) (Supp. IV 1999).

150. See *supra* Part II.C.

151. See 17 U.S.C. § 106 (1994).

152. See 17 U.S.C. §§ 107–120 (1994); 17 U.S.C. § 121 (Supp. IV 1999); *supra* notes 19–21 and accompanying text.

153. Although outside the scope of this Comment, some commentators have noted that in addition to CMS, “shrink-wrap” or “click-through” contract arrangements also provide means for copyright owners to expand their rights beyond copyright law. See Cohen, *supra* note 43, at 181–82. These contracts allow copyright owners to obtain both actual and legal protection of their copyrights. To contrast the “publicly” legislated copyright law, this phenomenon has been referred to as copyright owners engaging in “private legislation.” *Id.*

154. See Stéfik & Silverman, *supra* note 44, at 4 (“[T]he higher the security of a trusted system, the higher its cost.”).

of whether the copyright owner has given permission to make that use of the copyrighted work.¹⁵⁵ If CMS prevent a fair use, then only by circumventing them will users be able to engage in the fair use.

Although Congress deliberately allowed for a fair use exception in the DMCA,¹⁵⁶ the reality is that most individuals lack the expertise necessary to circumvent a CMS unless they can obtain some device or technology to assist them. Thus, the effectiveness of the statutory exemption for non-infringing uses is substantially lessened by Congress's strict prohibitions against the manufacture and distribution of technologies designed to circumvent protective measures.¹⁵⁷ Moreover, because determining fair uses is a highly fact-specific endeavor, it would be extremely difficult to design a technology that would circumvent CMS only for fair use purposes and not piracy purposes¹⁵⁸ and thus be legal under the DMCA.¹⁵⁹ As a result, even though the DMCA provides an exemption for fair use activities, the practical reality may be that fair uses of protected works do not occur.

The anticircumvention provisions of the DMCA may similarly impair freedom of speech and the flow of information. To the extent that overly protective CMS may prevent fair uses from occurring, the use of copyrighted works for political commentary may also be impaired.¹⁶⁰ Moreover, the statute's harsh civil and criminal penalties may have a chilling effect on individuals or institutions (such as schools and libraries) who would otherwise seek to circumvent overly protective CMS to engage in exempted types of uses.¹⁶¹ Thus, the breadth of the DMCA anticircumvention provisions threaten the public interest because

155. See *supra* note 20.

156. See 17 U.S.C. § 1201(c)(1) (Supp. IV 1999).

157. See Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. Rev. 354, 416 (1999) (discussing importance of anticircumvention provisions).

158. But see Pamela Samuelson, *Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to Be Revised*, 14 Berkeley Tech. L.J. 519, 549–51 (1999) (describing how circumvention system designed to make back-up copies would probably not run afoul of DMCA).

159. See 17 U.S.C. § 1201(b)(1) (Supp. IV 1999).

160. See Benkler, *supra* note 157, at 414–26 (describing negative effect of anticircumvention provisions on free speech).

161. See Note, *The Criminalization of Copyright Infringement in the Digital Era*, 112 Harv. L. Rev. 1705, 1721–22 (1999) (describing chilling effect of penalties for violating anticircumvention provisions).

they authorize and encourage the development of CMS that may prevent uses that are otherwise encouraged under copyright law.

VI. SYNTHESIZING THE STRENGTHS OF THE AHRA AND DMCA WOULD HELP ACHIEVE COPYRIGHT POLICY GOALS THROUGH TECHNOLOGY REGULATION

Even though the AHRA and the DMCA do not represent perfect solutions to the copyright issues presented by digital technology, each of the alternative approaches by which they regulate technology has its own merits. The relative merits of the AHRA and DMCA depend on the extent to which they support the goals of copyright policy. To support the constitutional mandate of promoting the “the Progress of Science and useful Arts,”¹⁶² copyright policy seeks to maximize the use and availability of copyrighted works by encouraging authors to produce works by compensating them for their efforts.¹⁶³ As such, copyright statutes are generally effective at promoting copyright policy if they ensure compensation to authors by preventing piracy, encourage fair use and availability of works to the public, and have lasting significance.

A. *Mandatory Installation of the SCMS Makes the AHRA More Effective at Preventing Copyright Piracy*

The most critical aspect of preventing piracy is restricting the creation and distribution of pirated versions of copyrighted works. Both the AHRA and the DMCA seek to prevent piracy by encouraging or requiring the use of copyright protection systems that attempt to limit these activities. The AHRA affirmatively requires technological modification of all digital audio recording devices through the incorporation of the SCMS.¹⁶⁴ The DMCA encourages copyright owners to develop protection systems themselves by providing a cause of action against the users and manufacturers of technologies that circumvent copyright protection systems.¹⁶⁵

Of the two, the AHRA approach of affirmatively requiring the installation of copyright protection systems is more effective at

162. U.S. Const. art. I, § 8, cl. 8.

163. See *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

164. See 17 U.S.C. § 1002(a) (1994); *supra* Part III.A.1.

165. See 17 U.S.C. § 1201(a)(2), (b)(1) (Supp. IV 1999); *supra* Part III.B.

preventing piracy. The AHRA maximizes the SCMS's effectiveness by mandating that all digital audio recording devices possess an SCMS.¹⁶⁶ If some digital audio recording devices were available without the SCMS, then individuals who engage in noncommercial copying¹⁶⁷ would likely prefer the less restrictive nature of those devices to the ones with the SCMS. This would encourage manufacturers not to incorporate the SCMS into some devices, thus reducing the statute's effectiveness. Even if a powerful nonstatutory incentive existed, such as copyright owners publishing their works in formats only usable with SCMS-compliant devices, some manufacturers would likely fill the niche for pirated works by producing devices without the SCMS.

Unlike the AHRA, the DMCA does not statutorily require manufacturers to incorporate CMS.¹⁶⁸ Therefore, because the types of CMS installed depend on market demand and there is likely to be a demand for devices without CMS or inferior CMS, some manufacturers will almost certainly produce such devices. In sum, the likelihood that the protective measures encouraged by the DMCA systems will be present in only some devices makes the DMCA less effective at preventing piracy than the mandatory installation model of the AHRA.

B. Congressional Selection of a Specific Copyright Protection System Better Protects the Public Interest in Fair Use and Availability of Copyrighted Works

While protecting the interests of copyright owners and preventing copyright piracy is an important goal of copyright law, promoting the public interest of maximizing the use and availability of copyrighted works is also important.¹⁶⁹ Therefore, in evaluating the AHRA and the DMCA, one critical issue is the extent to which the protective systems they promote may overprotect copyright owners' interests and thereby harm the ability of the public to engage in lawful uses of the work. With respect to this issue, the key distinction between the AHRA and the DMCA is that the former designates a specific system (the SCMS) to

166. See 17 U.S.C. § 1002(a); *supra* Part III.A.1.

167. The legislative history of the AHRA indicates that private or noncommercial copying is widespread in the United States. See S. Rep. No. 102-294, at 34 (1992).

168. See 17 U.S.C. § 1201(c)(3) (Supp. IV 1999).

169. See Bell, *supra* note 43, at 587.

receive legal protection,¹⁷⁰ whereas under the latter, any system that protects copyrighted works receives legal protection.¹⁷¹

Congressional approval of a specific protection system under the AHRA better protects the public interest than the private sector selection of a copyright protection system under the DMCA. One of the most significant problems with the DMCA is that it encourages copyright owners to create protection systems that allow such tight control of digital works that the systems effectively grant new rights beyond the bounds of traditional copyright law.¹⁷² Such an expansion could hurt the public interest by making digital works less available or less usable. In contrast, the AHRA does not create the possibility of such “private legislation”¹⁷³ and allows Congress to balance public and private interests in determining the necessary type of protection system.¹⁷⁴ It also incorporates congressionally approved protection systems that are more likely to take into account other public interest issues, such as protecting consumer privacy¹⁷⁵ and not stifling technological development.¹⁷⁶

C. Incorporating Rulemaking Capabilities Such as Those Found in the DMCA Can More Effectively Promote Copyright Policy by Giving Statutes Lasting Significance

Much copyright legislation is enacted in response to new technological developments that make preceding statutes less effective or inapplicable.¹⁷⁷ Statutes that regulate technology are particularly susceptible to becoming outdated because the technological paradigms they are designed to address often change rapidly and in unexpected

170. See 17 U.S.C. § 1002(c) (1994); *supra* Part III.A.1.

171. See 17 U.S.C. § 1201(a)(2), (b)(1) (Supp. IV 1999); *supra* Part III.B.

172. See *supra* Part V.B.2.

173. Cohen, *supra* note 43, at 181; *supra* note 153 and accompanying text.

174. The SMCS of the AHRA represents an example of this kind of congressional balancing because it allows first-generation copying (beneficial to users) but limits second-generation copying (beneficial to copyright owners). See 17 U.S.C. § 1002 (1994); *supra* Part III.A.1.

175. See Julie E. Cohen, *A Right to Read Anonymously: A Closer Look at “Copyright Management” in Cyberspace*, 28 Conn. L. Rev. 981, 983–89 (1996) (describing copyright protection systems that obtain information about users for commercial purposes).

176. See Samuelson, *supra* note 158, at 555–57 (describing how vagueness of DMCA anticircumvention provisions could lead to strike suits against copyright owners that would stifle technological innovation).

177. See *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 430 (1984).

ways.¹⁷⁸ Thus, copyright statutes that remain relevant despite technological change ensure that future innovation will not diminish the effectiveness of the overall policy of maximizing the production and availability of copyrighted works.

The forward-looking provisions of the DMCA¹⁷⁹ address unforeseen effects or problems that may result from the prohibition on acts to circumvent copyright protection systems.¹⁸⁰ The ability to adapt quickly to new situations is particularly important for copyright statutes that regulate technology because the subject matter of their regulations changes so frequently. At least in regard to acts of circumvention,¹⁸¹ the rulemaking provisions of the DMCA allow it to address both any unforeseen negative effects it might have and the development of new technologies that reduce its effectiveness. This level of flexibility results from the continued post-implementation evaluation of the statute's effectiveness by the Librarian of Congress and the Copyright Office.¹⁸² By combining rulemaking authority with this monitoring capacity, the Librarian of Congress can react more quickly and efficiently to resolve a problem than if lobbyists, the media, or another group had to get the attention of Congress to obtain an official amendment to the statute. Thus, such flexibility is an advantage of the DMCA over the AHRA.

VI. CONCLUSION

Both the AHRA and the DMCA take new steps in addressing digital piracy through the regulation of technology. While their approaches offer advantages over the traditional model of expanding copyright owners' rights, neither statute regulates technology in a way that adequately and effectively addresses all the concerns raised by digital technology.

178. The advent of MP3s is an example of one such development that was unexpected when the AHRA was passed. *See supra* Part V.A.

179. The AHRA and DMCA differ in that while the latter possesses rule-making provisions that may accommodate technological change, the AHRA cannot be adjusted to address new problems without formal congressional amendment. *See supra* Part III.B.

180. *See* 17 U.S.C. § 1201(a)(1)(C) (Supp. IV 1999); *supra* Part III.B.

181. Because these rulemaking procedures do not apply to the anticircumvention provisions that regulate technology, the flexibility they add to the prohibition against acts of circumvention is lacking from the prohibition on technologies of circumvention. *See* 17 U.S.C. § 1201(a)(1)(E) (Supp. IV 1999).

182. *See* 17 U.S.C. § 1201(a)(1)(C).

In the case of the AHRA, computers and like technologies may soon be the stereotypes of the future and allow widespread copying and distribution of digital music recordings, yet they fall outside the provisions of the AHRA. As such, the AHRA would benefit by having Congress reassess the statute's proper scope and add a provision to have some rulemaking body, such as the Register of Copyrights, monitor technological developments and periodically redefine the AHRA's scope as needed.

In order to resolve the piracy and public-interest concerns of the DMCA, Congress should endorse specific copyright management systems for different technologies and require that manufacturers of those technologies incorporate these protective systems into their products. This would better protect the public interest because Congress would likely choose systems that are in line with the overall copyright goals of availability and fair use of copyrighted works. Such a solution would also better prevent piracy because the systems' presence in all new products of that technology would more effectively prevent the distribution and creation of pirated copies.

In sum, the alternative approaches of the AHRA and DMCA to regulating digital technology present certain advantages to accomplishing copyright policy. If Congress takes note of the specific strengths of each of these statutes, future attempts to regulate technology may better achieve the policy goals of encouraging fair use and availability of copyrighted works and protecting owners from copyright piracy.

